

No.

8900211



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

**Northrup King Co.**

Whereas, THERE HAS BEEN PRESENTED TO THE  
**Secretary of Agriculture**

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (ACT OF OCTOBER 3, 1930, CH. 3562, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'S19-90'

In Testimony Whereof, I have hereunto set  
my hand and caused the seal of the Plant  
Variety Protection Office to be affixed  
at the City of Washington, D. C.  
this 29th day of March in  
the year of our Lord one thousand nine  
hundred and ninety-one.

Attest

*Kenneth F. Evans*

Commissioner

Plant Variety Protection Office  
Agricultural Marketing Service

*Ed Madigan*  
Secretary of Agriculture


U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE

FORM APPROVED: OMB NO. 0581-0055

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

## APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

1. NAME OF APPLICANT(S) Northrup King Co.		2. TEMPORARY DESIGNATION X8820, J301429		3. VARIETY NAME S19-90	
4. ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code) P. O. Box 959 Minneapolis, MN 55440		5. PHONE (Include area code) 612-593-7333		FOR OFFICIAL USE ONLY PVPO NUMBER 8900211	
6. GENUS AND SPECIES NAME Glycine max		7. FAMILY NAME (Botanical) Leguminosae		FILING DATE May 15 1989 TIME 2:00 <input type="checkbox"/> A.M. <input checked="" type="checkbox"/> P.M.	
8. KIND NAME Soybean		9. DATE OF DETERMINATION January, 1987		FEES RECEIVED AMOUNT FOR FILING \$1800 2350 DATE May 15, 1989; May 22, 1989 AMOUNT FOR CERTIFICATE \$250 DATE February 20, 1991	
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) Corporation				12. DATE OF INCORPORATION 1976	
11. IF INCORPORATED, GIVE STATE OF INCORPORATION Delaware					
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS Robert W. Romig Northrup King Co. P. O. Box 959 Minneapolis, MN 55440 PHONE (Include area code): 612-593-7305					
14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED a. <input checked="" type="checkbox"/> Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.) b. <input checked="" type="checkbox"/> Exhibit B, Novelty Statement. c. <input checked="" type="checkbox"/> Exhibit C, Objective Description of Variety (Request form from Plant Variety Protection Office.) d. <input checked="" type="checkbox"/> Exhibit D, Additional Description of Variety. e. <input checked="" type="checkbox"/> Exhibit E, Statement of the Basis of Applicant's Ownership.					
15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act.) <input type="checkbox"/> Yes (If "Yes," answer items 16 and 17 below) <input checked="" type="checkbox"/> No					
16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> Yes <input type="checkbox"/> No			17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input type="checkbox"/> Foundation <input type="checkbox"/> Registered <input type="checkbox"/> Certified		
18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.? <input type="checkbox"/> Yes (If "Yes," give date) <input checked="" type="checkbox"/> No					
19. HAS THE VARIETY BEEN RELEASED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES? <input type="checkbox"/> Yes (If "Yes," give names of countries and dates) <input checked="" type="checkbox"/> No					
20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable. The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.					
SIGNATURE OF APPLICANT 				DATE May 11, 1989	
SIGNATURE OF APPLICANT				DATE	

## EXHIBIT A

## Origin and Breeding History of the Variety

- 1980-82 - The Northrup King soybean research group at Washington, Iowa made the cross 'B152' x 'Pella' and advanced the population to F<sub>6</sub>. In October, 1982, the Northrup King soybean research group at St. Joseph, Illinois harvested 100 random plants and threshed them individually.
- 1983 - We grew each of the 100 plant selections in an F<sub>7</sub> progeny row. We selected one of these, numbered J301429, on the basis of agronomic appearance to be tested in a preliminary yield trial. This line was subsequently named S19-90.
- 1984-86 - We tested S19-90 in replicated yield trials at several Midwestern U.S. and Southern Ontario locations and found it to yield well in comparison to other late Maturity Group I and early Group II varieties. We identified and confirmed the descriptive characteristics purple flowers, tawny pubescence, tan pods, grey hilum, and dull seed coat luster. We tested S19-90 for reaction to iron-deficiency chlorosis on calcareous soil in Northwest Iowa and found it to give an intermediate reaction. We tested it for resistance to Race 3 of Phytophthora megasperma by inoculation of detached cotyledons and found it to be resistant.

In the winter of 1986-87 we initiated seed increase from approximately 500 grams of carefully hand rogued seed. We removed all plants not conforming to the variety description by intensively roguing the increase block several times.

- 1987-88 - We continued to test S19-90 in advanced yield trials to confirm descriptive characteristics and performance. We tested it for reaction to other races of Phytophthora and confirmed the presence of the Rps 1-c gene for resistance.

We grew Breeder Seed of S19-90 in 1987 from the initial increase made the previous winter. We also grew 100 progeny rows to monitor within line variability and to produce Pedigree Seed. The variety was judged to be uniform for observable characteristics.

In 1988 we grew Foundation Seed of S19-90. The Iowa Crop Improvement Association inspected the production field and found it to meet the standards for Foundation Seed. The National Soybean Variety Review Board approved S19-90 for eligibility for Certification on December 8, 1988.

S19-90 is a stable and uniform soybean variety. Seeds of S19-90 have grey hila and like other grey hilum varieties, may exhibit occasional seeds with lighter or darker than normal hila. We have observed occasional seeds with solid or partially black seedcoats.

8900211

We attribute these to soybean mosaic virus or a rare mutation of the I gene which controls seed coat color. We have observed no other variants in six years of testing and 3 cycles of seed increase other than minor, environmentally induced variation normally encountered in a soybean variety.

We will maintain varietal purity by use of progeny rows as needed.

## EXHIBIT B

## Novelty Statement for the Variety

Soybean variety S19-90 is most similar to B152 and A1937. It can be differentiated from B152 on the basis of pubescence color. S19-90 has tawny pubescence while B152 has grey pubescence. It can be differentiated from A1937 on the basis of pod color and hilum color. S19-90 has tan pods and seeds with grey hila while A1937 has brown pods and seeds with brown hila.

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
LIVESTOCK, MEAT, GRAIN & SEED DIVISION  
PLANT VARIETY PROTECTION OFFICE  
BELTSVILLE, MARYLAND 20705

EXHIBIT C  
(Soybean)

**OBJECTIVE DESCRIPTION OF VARIETY**  
**SOYBEAN (*Glycine max* L.)**

NAME OF APPLICANT(S) Northrup King Co.	TEMPORARY DESIGNATION X8820, J301429	VARIETY NAME S19-90
ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code) Northrup King Co. Attention: R.W. Romig P. O. Box 959 Minneapolis, MN 55440		FOR OFFICIAL USE ONLY PVPO NUMBER 8900211

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g.,   ). Starred characters ★ are considered fundamental to an adequate soybean variety description. Other characters should be described when information is available.

1. SEED SHAPE:



1 = Spherical (L/W, L/T, and T/W ratios = < 1.2)  
3 = Elongate (L/T ratio > 1.2; T/W = < 1.2)

2 = Spherical Flattened (L/W ratio > 1.2; L/T ratio = < 1.2)  
4 = Elongate Flattened (L/T ratio > 1.2; T/W > 1.2)

★ 2. SEED COAT COLOR: (Mature Seed)

1 = Yellow      2 = Green      3 = Brown      4 = Black      5 = Other (Specify) \_\_\_\_\_

3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

1 = Dull ('Corsoy 79'; 'Braxton')      2 = Shiny ('Nebsoy'; 'Gasoy 17')

★ 4. SEED SIZE: (Mature Seed)

Grams per 100 seeds      Compared to Corsoy 79 at 14

★ 5. HILUM COLOR: (Mature Seed)

1 = Buff      2 = Yellow      3 = Brown      4 = Gray      5 = Imperfect Black      6 = Black      7 = Other (Specify) \_\_\_\_\_

May contain up to 2% other hilum.

★ 6. COTYLEDON COLOR: (Mature Seed)

1 = Yellow      2 = Green

★ 7. SEED PROTEIN PEROXIDASE ACTIVITY:

1 = Low      2 = High

★ 8. SEED PROTEIN ELECTROPHORETIC BAND:

1 = Type A (SP1<sup>a</sup>)      2 = Type B (SP1<sup>b</sup>)

★ 9. HYPOCOTYL COLOR:

1 = Green only ('Evans'; 'Davis')      2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')  
3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')  
4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

★ 10. LEAFLET SHAPE:

1 = Lanceolate      2 = Oval      3 = Ovate      4 = Other (Specify) \_\_\_\_\_

## 11. LEAFLET SIZE:

☒ 21 = Small ('Amsoy 71'; 'A5312')  
3 = Large ('Crawford'; 'Tracy')

2 = Medium ('Corsoy 79'; 'Gasoy 17')

## 12. LEAF COLOR:

☒ 21 = Light Green ('Weber'; 'York')  
3 = Dark Green ('Gnome'; 'Tracy')

2 = Medium Green ('Corsoy 79'; 'Braxton')

## ★ 13. FLOWER COLOR:

☒ 2

1 = White      2 = Purple      3 = White with purple throat

## ★ 14. POD COLOR:

☒ 1

1 = Tan      2 = Brown      3 = Black

## ★ 15. PLANT PUBESCENCE COLOR:

☒ 2

1 = Gray      2 = Brown (Tawny)

## 16. PLANT TYPES:

☒ 11 = Slender ('Essex'; 'Amsoy 71')  
3 = Bushy ('Gnome'; 'Govan')

2 = Intermediate ('Amcor'; 'Braxton')

## ★ 17. PLANT HABIT:

☒ 31 = Determinate ('Gnome'; 'Braxton')      2 = Semi-Determinate ('Will')  
3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

## ★ 18. MATURITY GROUP:

☐ 41 = 000  
9 = VI2 = 00  
10 = VII3 = 0  
11 = VIII4 = I  
12 = IX5 = II  
13 = X

6 = III

7 = IV

8 = V

## ★ 19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

## BACTERIAL DISEASES:

★

☐Bacterial Pustule (*Xanthomonas phaseoli* var. *sojensis*)

★

☒ 1Bacterial Blight (*Pseudomonas glycinea*)

★

☐Wildfire (*Pseudomonas tabaci*)

## FUNGAL DISEASES:

★

☒ 1Brown Spot (*Septoria glycines*)Frogeye Leaf Spot (*Cercospora sojina*)

★

☐

Race 1

☐

Race 2

☐

Race 3

☐

Race 4

☐

Race 5

☐

Other (Specify) \_\_\_\_\_

☐Target Spot (*Corynespora cassicola*)☐Downy Mildew (*Peronospora trifoliorum* var. *manshurica*)☐Powdery Mildew (*Microsphaera diffusa*)

★

☒ 1Brown Stem Rot (*Cephalosporium gregatum*)

Less susceptible than most varieties.

☐Stem Canker (*Diaporthe phaseolorum* var. *caulivora*)

## 19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

## FUNGAL DISEASES: (Continued)

- ★ ☒ 1 Pod and Stem Blight (*Diaporthe phaseolorum* var. *sojae*)
- ☒ 1 Purple Seed Stain (*Cercospora kikuchii*)
- ☐ Rhizoctonia Root Rot (*Rhizoctonia solani*)
- Phytophthora Rot (*Phytophthora megasperma* var. *sojae*)
- ★ ☒ 2 Race 1 ☒ 2 Race 2 ☒ 2 Race 3 ☒ 1 Race 4 ☒ 1 Race 5 ☒ 2 Race 6 ☒ 2 Race 7
- ☒ 2 Race 8 ☒ 2 Race 9 ☐ Other (Specify) \_\_\_\_\_

## VIRAL DISEASES:

- ☒ 1 Bud Blight (Tobacco Ringspot Virus)
- ☐ Yellow Mosaic (Bean Yellow Mosaic Virus)
- ★ ☐ Cowpea Mosaic (Cowpea Chlorotic Virus)
- ☐ Pod Mottle (Bean Pod Mottle Virus)
- ★ ☐ Seed Mottle (Soybean Mosaic Virus)

## NEMATODE DISEASES:

- Soybean Cyst Nematode (*Heterodera glycines*)
- ★ ☒ 1 Race 1 ☒ 1 Race 2 ☒ 1 Race 3 ☒ 1 Race 4 ☐ Other (Specify) \_\_\_\_\_
- ☐ Lance Nematode (*Hoplolaimus Colombus*)
- ★ ☐ Southern Root Knot Nematode (*Meloidogyne incognita*)
- ★ ☐ Northern Root Knot Nematode (*Meloidogyne Hapla*)
- ☐ Peanut Root Knot Nematode (*Meloidogyne arenaria*)
- ☐ Reniform Nematode (*Rotylenchulus reniformis*)
- ☐ OTHER DISEASE NOT ON FORM (Specify): \_\_\_\_\_

## 20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

- ★ ☒ 1 Iron Chlorosis on Calcareous Soil
- ☐ Other (Specify) \_\_\_\_\_

## 21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

- ☐ Mexican Bean Beetle (*Epilachna varivestis*)
- ☐ Potato Leaf Hopper (*Empoasca fabae*)
- ☐ Other (Specify) \_\_\_\_\_

## 22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape	S1346	Seed Coat Luster	S15-50
Leaf Shape	S27-10	Seed Size	Century 84
Leaf Color	A1937	Seed Shape	S30-31
Leaf Size	Corsoy 79	Seedling Pigmentation	S1346

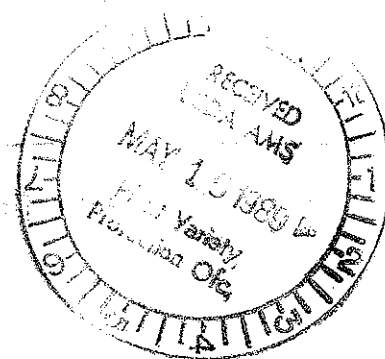


## 23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

VARIETY	NO. OF DAYS MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT		SEED SIZE G/100 SEEDS	NO. SEEDS/POD
				CM Width	CM Length	% Protein	% Oil		
Submitted	119	1.5	78	5.7	9.5	39.0	21.8	17.6	2-3
Corsoy 79 Name of Similar Variety	121	3.0	98	5.5	9.6	38.8	21.6	13.5	2-3

## PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.
2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.
3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A<sub>2</sub> in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.
4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.



## EXHIBIT D

## Additional Description of the Variety

Soybean variety S19-90 is a late Group I cultivar maturing between Al937 and Corsoy 79. It has normal tolerance to metribuzin herbicide. It exhibits long hypocotyl elongation when grown in 11 cm. of sand at 25° C for 14 days.

## EXHIBIT E

## Statement of the Basis of Applicant's Ownership

Soybean variety S19-90 was developed by the Northrup King Co. soybean breeding staff from germplasm sources cited in Exhibit A of this application. Northrup King Co. believes that the variety is novel as defined in the Plant Variety Protection Act and, therefore, that Northrup King Co. is the sole owner of the variety.